SUMMARY

The Nuclear Material Stabilization mission consists of the Plutonium Finishing Plant (PFP), WBS 1.4.5, PBS TP05.

NOTE: Unless otherwise noted, the Safety, Conduct of Operations, Milestone Achievement, and Cost/Schedule data contained herein is as of March 31, 2000. All other information is as of April 14, 2000, unless otherwise stated.

As of April 14, 2000, a total of 224 cans of Plutonium oxides and sludges have been stabilized through thermal stabilization (23 items since last report). A total of 13 liters of Plutonium nitrate solution have been stabilized in the prototype vertical denitration calciner [no change since December 1999 due to focus on Mg(OH)₂ Precipitation Process installation activities].

The installation of three additional muffle furnaces for thermal stabilization of oxides has been completed. A total of five furnaces are now operational.

Fiscal-year-to-date milestone performance (EA, DOE-HQ, and RL) shows that two of four milestones (50 percent) were completed on or ahead of schedule, no milestones were completed late, and two (50 percent) are overdue. Milestone TRP-00-415 is delayed due to comment incorporation before design release. The design is now scheduled for release May 5, 2000. Milestone TRP-00-500 is late due to a proposed change in process implementation. A letter was sent to RL indicating the milestone would not be met. Further details can be found in the milestone exception report following the cost and schedule variance analysis.

ACCOMPLISHMENTS

Maintain Safe and Compliant PFP

- As of April 21, 2000, there have been 141 days without a lost workday injury.
- Modified PFP airborne radioactivity area (ARA) posting practice allowing limited area ARA
 posting to support duct level decontamination without posting the entire processing area as
 ARA.
 - Could provide a cost savings by reducing resources needed for duct level decontamination work.
 - Also being reviewed for implementation in other areas.
- Completed the OMEGA Sprinkler Head Replacement Project in the 234-5Z duct level, enabling impairments against Risers #9 and #11 to be cleared.

Oxides/Metals/Polycubes Stabilization

- Completed startup of the three addition muffle furnaces in the HA21I glove box and initiated routine operations two months ahead of schedule. Year-to-date, 224 items have been stabilized.
- Successfully completed preliminary testing of PFP's ability to meet 950° stabilization criterion.

(DOE Standard 3013-99 requires that "oxides shall be stabilized by heating the material in an oxidizing atmosphere to a Material Temperature of at least 950°C for not less than two hours.").

Maintain Safe & Secure SNM

- Proceeded with corrective actions established to support Pu metal vulnerability:
 - Initiated enhanced surveillance (weighing/radiography) of 2736-Z metal inventory.
 - Developed schedule to support stabilization of high risk items.
 - Readiness expected April 28.

Solution Stabilization

- Continued progress to support startup of Pu Solution Stabilization:
 - Glovebox 4 (filtrate) and the support frame for glovebox 3 (process) were received and glovebox 4 has been installed in room 230-C.
 - Provisionally certified 5 operators on the Mg(OH)² process during testing at the glovebox vendor: Identified equipment and arrangement problems. Finalized the draft operating procedures.
 - Plan of Action for the ORR was issued for final internal review and informal review by RL.
- Download of solutions in room 227 has been completed in support of Phase II testing by Plutonium Processing Support Laboratories (PPSL).

Polycube Stabilization

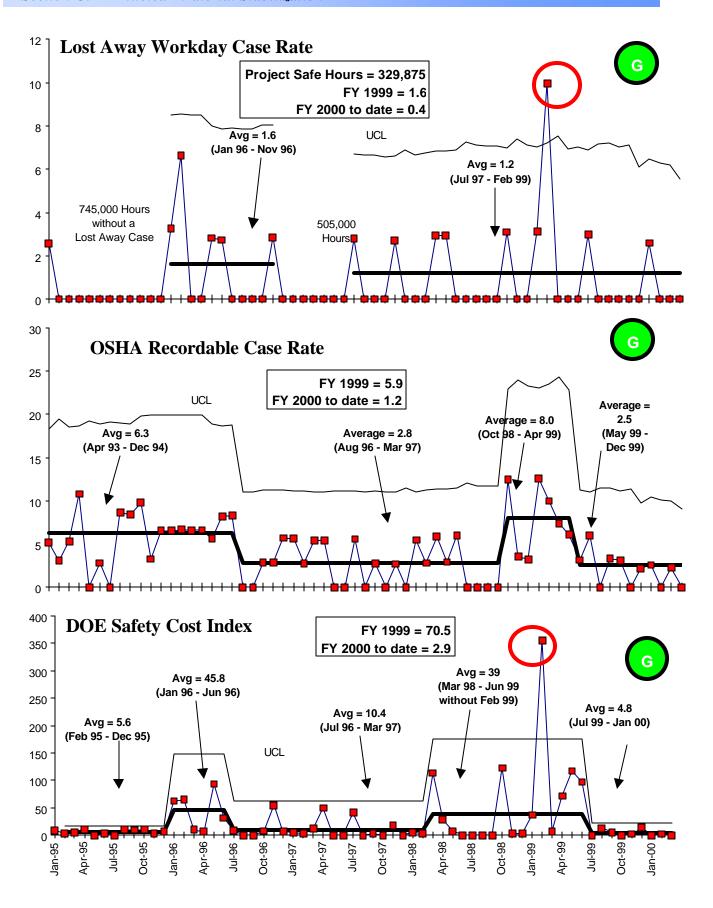
Completed Phase II testing of Polycubes stabilization (isotopics, heavy metals, pyrolysis
products, gas generation, heat of reaction and process optimization). A report of the summary
test results and the report documenting the operating parameters will be issued by the end of the
April.

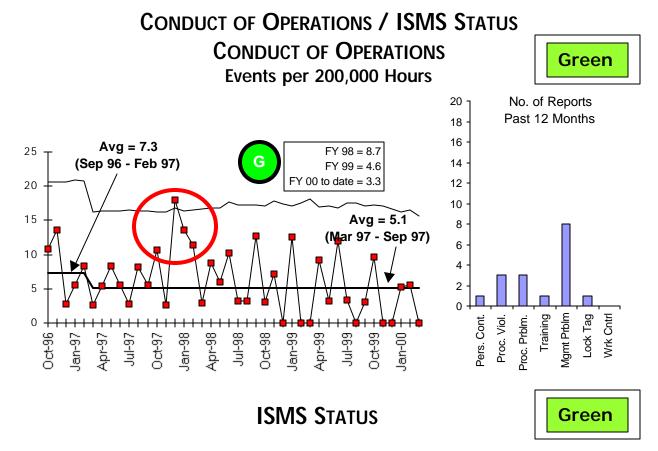
SAFETY

Safety performance continued to be excellent in March with no OSHA Recordable or Lost Workday Case injuries.

The DOE Safety Cost Index has both a new average and control limits reflecting the significant decrease noted last month. FY 2000 OSHA case rate and DOE Safety Cost Index are very favorable

OSHA recordable case rate has significantly improved in comparison to the adverse trend of Spring 1999. As of April 21, 2000, there have been 141 days without a lost workday injury.





- All action items resulting from the Nuclear Material Stabilization Project Phase 1 verification assessment of the Integrated Safety Management System implementation have been completed.
- Phase II verification will be completed in conjunction with all Fluor projects during the 3rd quarter of the fiscal year.

Breakthroughs / Opportunities for Improvement

BREAKTHROUGHS

Green

• Implementation of a WIPP "validated" plutonium measuring Nondestructive Assay (NDA) system in FY 2000 is being worked. If successful, implementation of this WIPP "validated" Pu NDA measurement for residues processing will significantly reduce shipment costs to WIPP (i.e., results in significantly fewer drums by as much as 1,000, which will reduce overall costs by approximately \$2.4M [i.e., \$2.4K per drum]. NDA equipment has been authorized and purchasing is in process.

OPPORTUNITIES FOR IMPROVEMENT

Yellow

- Modification of Personnel Security Assurance Program (PSAP) two-man rule requirements, which would provide a potential reduction of resources for facility surveillance and maintenance activities, is in committee review. A recommendation is expected by May 2000.
- Modified PFP airborne radioactivity area (ARA) posting practice allowing limited area ARA
 posting to support duct level decontamination without posting the entire processing area as
 ARA. This not only provides a current cost savings by reducing resources needed for duct level
 decontamination work, it is also being reviewed for implementation in other areas.
- Discontinuing routine analysis of stabilized oxides for residual moisture in favor of testing prior to final canning could save staff-hours and radiation dose. An action plan is being developed with a completion schedule for May 2000.
- A new Criticallity Safety Evaluation Report (CSER) allowing additional boats in HC-18BS is under development. This will allow more efficient operations and should accelerate throughput. A rough draft will be available by the end of April.

UPCOMING ACTIVITIES

- Complete annual revision to Integrated Project Management Plan (IPMP) in May 2000.
- Deliver 2 Validated Data Packages on Tank 241-Z-361 core samples in May 2000.
- Thermally stabilize metals determined to be of higher risk as a result of ongoing surveillance activities (ie: radiography and weighing) in May 2000.
- Begin Pu solution stabilization via Mg(OH)₂ in the fourth quarter of FY 2000.
 - Deliver remaining glove boxes and equipment for installation in April 2000.
 - Complete installation in July 2000.
 - Complete ORR and training activities for stabilization activities in room 230-C in September 2000.
- Startup Cementation operations in fourth quarter of FY 2000.
- Complete installation and startup of the Bagless Transfer System (BTS) in fourth quarter of FY 2000.
- Begin metal stabilization processing in November 2000.
- Initiate polycube stabilization in 1st quarter of FY 2001.

- Complete Vulnerability Assessment that will be used to determine process location and storage location of Pipe-n-Go drums in May 2000.
- Complete RL Milestone FSP-00-415, Complete Project W-460 Facility Design, (now overdue) by incorporating comments to prepare design for release for construction by third quarter 2000.

COST PERFORMANCE (-\$0.5M):

	BCWP	ACWP	VARIANCE
Nuclear Material Stabilization	\$54.0	\$54.5	-\$0.5

The \$0.5 million (one percent) unfavorable cost variance is within established thresholds. Some underruns in the cost variance due to a shortage of staff and lag in costs for contracts [e.g., including the Energy Services contract for steam, Mg(OH)₂ glove box procurements, etc.] are being offset by the increased assessment for fee and analysis costs for the Tank 241-Z-361 samples.

SCHEDULE PERFORMANCE (-\$11.8M):

	BCWP	BCWS	VARIANCE
Facility Stabilization	\$54.0	\$65.7	-\$11.8

The \$11.8 million (18 percent) unfavorable schedule variance is due primarily to the behind status on Project W-460 capital activities, such as the elimination of trailers and vault modification design; infrastructure projects, such as criticality alarm panel and radiation constant air monitor upgrades; and the solution stabilization and cementation startup activities. The project is significantly ahead of schedule on oxide stabilization.

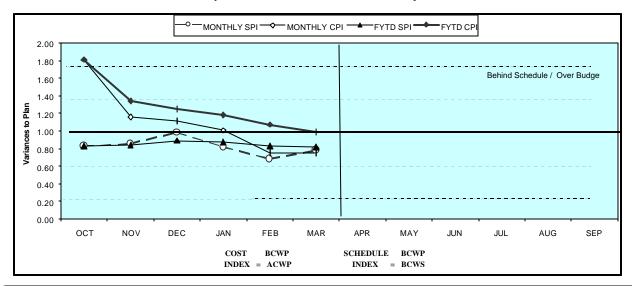
FY 2000 Cost/Schedule Performance – All Fund Types Cumulative to Date Status – (\$000)

		FYTD								
	Bv PBS	BCWS	BCWP	ACWP	sv	%	cv	%	PEM	
WBS										
1.4.5	PFP									
TP05	Deactivation	\$ 65,706	\$ 53,950	\$ 54,477	\$ (11,755)	-18%	\$ (526)	-1%	\$ 127,203	
	Total	\$ 65,706	\$ 53,950	\$ 54,477	\$ (11,755)	-18%	\$ (526)	-1%	\$ 127,203	

RL-Directed costs (steam) are included in the PEM BCWS.

COST/SCHEDULE PERFORMANCE INDICES (MARCH 2000 AND FYTD)





FV 2000	OCT	NOV	DEC	IAN	FFR	MAR	APR	MAV	IIIN	ш	AUG	SEP
MONTHLY SPI	0.83	0.85	0.98	0.82	0.68	0.78						
MONTHLY CPI	1.81	1.16	1.11	1.01	0.75	0.75						
FYTD SPI	0.83	0.84	0.89	0.87	0.83	0.82						
FYTD CPI	1.81	1 34	1.25	1 18	1.07	0.99						
MONTHLY BCWS	\$7.913	\$12,725	\$9.999	\$10.540	\$11.128	\$ 13,401	\$ 9.632	\$ 12.535	\$ 8.950	\$ 9,309	\$ 11.289	\$ 9.782
MONTHLY BCWP	\$6.543	\$10.873	\$9.849	\$8.638	\$7,568	\$ 10.480						
MONTHLY ACWP	\$3,613	\$9 386	\$8 845	\$8 587	\$10.085	\$ 13.961						
FYTD BCWS	\$7.913	\$20,638	\$30,637	\$41,177	\$52,305	\$ 65,706	\$ 75,338	\$ 87.872	\$ 96.822	\$ 106.132	\$ 117.421	\$ 127,203
FYTD BCWP	\$6.543	\$17.416	\$27,265	\$35,903	\$43,470	\$ 53,950						
FYTD ACWP	\$3.613	\$12,999	\$21.844	\$30.431	\$40.516	\$ 54,477						

COST VARIANCE ANALYSIS: (-\$0.5M)

WBS/PBS <u>Title</u>

1.4.5.1.10/TP05 Maintain Safe and Secure SNM (+\$0.9M)

Description and Cause: Underrun due to lag in subcontractor (PTH) invoices and accruals for

Safeguards and Security (SAS) contracts.

Impact: No impact.

Corrective Action: None required.

1.4.5.1.14/TP05 Disposition of Nuclear Materials (+\$1.6M)

Description and Cause: Positive cost variance is the result of the ability to disposition waste and product materials at significantly reduced costs. There is a partially offsetting negative cost variance associated with Project W-460 because of delays in starting construction.

Impact: Project W-460 could cost more than originally estimated.

Corrective Action: Maintain aggressive hiring, training, and clearance program for Nuclear Operators and other support, which is now being implemented as planned.

1.4.5.1.15/TP05 Transition PFP (-\$0.6M)

Description and Cause: The unfavorable cost variance is the result of increased costs for lab analysis of tank 361 samples as well as carryover work scope not yet reflected in the baseline. Laboratory Analysis has shown tank values exceed 50 ppm of PCBs. Evaluation as to disposition is underway.

Impact: If work scope is stopped due to budget issues, the Tri-Party Agreement milestone due May 31, 2000 would not be met. Continuing work scope will result in cost over run for this activity, savings from elsewhere within NMSP will be required to offset the overrun.

Corrective Action: Approve and implement baseline change request to reflect FY 1999 carryover work scope. If PCBs are found to exceed allowable limits, a separate change request may be required to incorporate the additional special waste handling requirements into the baseline. Identify cost savings from elsewhere within the NMSP to offset this overrun.

1.4.5.1.12/TP05 PFP Fee Allocation (-\$2.5M)

Description and Cause: Unfavorable cost variance due to point adjustment (-\$1,769K) in October to adjust for delay in staff hiring ramp-up at the beginning of FY 2000. Also an increase in the fee accrual from a rate of 90% to 100%.

Impact: No impact.

Corrective Action: None required.

SCHEDULE VARIANCE ANALYSIS: (-\$11.8M)

WBS/PBS <u>Title</u>

1.4.5.1.14/TP05 Disposition of Nuclear Material (-\$7.8M)

Description and Cause: The unfavorable schedule variance is primarily due to delays in Line Item Project W-460, Plutonium Stabilization and Packaging System, definitive design and construction. Facility construction modifications have not yet started as scheduled, due to deviations to the Definitive Design, required changes to the NEPA Supplement Analysis and approval of the Notice of Construction (NOC) by the Washington State Department of Health (WSDOH).

Impact: Potential delay in the startup of the Bagless Transfer and Stabilization system in 2736-ZB, which can impact stabilization activities in FY 2001.

Corrective Action: To assist in the recovery, a second BTS unit is being installed in the 234-5Z facility, which will enable BTS unit operation in FY 2000 as originally planned. Project W-460 management and WSDOH staffs are aggressively working to approve the NOC, which will enable construction to begin. The aggressive hiring, training and clearance program for Nuclear Operators and other support staff is being implemented as planned.

1.4.5.1.13/TP05 Stabilize SNM (-\$3.1M)

Description and Cause: The unfavorable schedule variance is due primarily to the behind schedule status on residues and solution stabilization activities. Solution stabilization construction activities are two months behind schedule, with startup now planned for September 2000. Also, restart activities for cementation are behind schedule due to the need for additional Nondestructive Assay (NDA) equipment necessary for WIPP validation. Restart of cementation is now anticipated in late July 2000, versus the April 2000 restart. Oxide stabilization activities continue significantly ahead of schedule.

Impact: Potential delay in both restart of cementation and startup of Mg(OH) ₂ precipitation processing for solution stabilization; anticipate schedule recovery by the end of FY2000.

Corrective Action: An aggressive recovery plan has been developed for both solution stabilization and cementation activities to commence operations in September and July respectively. Plans are also in place to stabilize solutions and residues exceeding baseline commitments even with a late processing start. NDA equipment has been ordered and NMSP is working with the WM Project to meet the WIPP certification.

ISSUES

DOE Standard 3013-99 requires that "oxides shall be stabilized by heating the material in an oxidizing atmosphere to a Material Temperature of at least 950°C ... for not less than 2 hours."

Impact(s): This issue is resolved.

Corrective Action: A test plan was executed to evaluate the process options. Two tests with a surrogate oxide material in the spare thermal stabilization furnace indicate that the oxide powder temperature exceeds the minimum stabilization temperature of 950°C before the furnace reaches its steady-state control temperature of 1000°C. The surrogate oxide remained above 950°C for at least ½hour before the furnace reached that temperature, throughout the 2 hours

with the furnace at 1000°C, and at least 0.1 hour after the furnace began to cool from 1000°C.

Lack of certified shipping containers in the DOE Complex to meet PFP schedules.

Impact(s): Prohibits shipment of nuclear materials that cannot go to either WIPP or DOT-6M containers (i.e., Pu standards for re-certification, shipment of reactive materials for processing elsewhere, etc.).

Corrective Action: Work with the DOE Complex to certify containers to meet PFP shipping needs (i.e., 9975 container to be re-certified in June 2000, etc.).

Jointly resolve issues associated with precipitation process. Concentration, Density, Filtrate Handling (permitting of 241-Z to handle heavy metals), discard directly to tank farms.

Impact(s): Concentration/density issue may significantly impact the number of containers to be stored under final disposition. The 241-Z permitting issue, if not resolved, can impact the plant's ability to discard solution waste to tank farms resulting from the Mg(OH)2 precipitation processing of plutonium solutions.

Corrective Action: Concentration/density issue is being worked through laboratory testing at both PNNL and PFP's Plutonium Process Support Laboratories. Appropriate actions will be taken according to laboratory results. Also, project management has worked with the Tank D-5/D-8 readiness team to ensure that these tanks are ready to support solution stabilization processing startup as scheduled.

Implementation of supercritical fluid extraction technology for moisture measurements will require installation of a new glovebox in room 235-B.

Impact(s): This installation will require several hundred thousand dollars more than budgeted for procurement and installation and result in several weeks of processing impact during the installation.

Corrective Action: Establish a cost and schedule estimate for the installation of this equipment and process a BCR to modify schedule. Problem being worked; last report on this issue.

Equipment for processing Pu inside the $Mg(OH)_2$ gloveboxes needs to be defined and approved by Operations before glovebox size can be finalized.

Impact(s): Gloveboxes cannot be ordered until size is finalized.

Corrective Action: Use mockup and daily meetings with Operations to finalize the internal arrangement of the gloveboxes to the point where a size can be determined and the gloveboxes ordered.

Seismic concerns related to the material storage cage in room 638 cage, 2736-ZB facility.

Impact(s): Completing recovery plan to address these issues, resulting in higher exposure than normal to vault operators.

Corrective Action: Material movement out of cage completed. Statement of work issued to Fluor Federal Services (FFS) to install new seismically qualified racks in room 638 cage. This issue is considered resolved and no longer reported.

DOE/REGULATOR/EXTERNAL ISSUES

- RCRA Permitting Part A revision for adding ignitability waste code was submitted to Ecology in support of Cementation startup.
- RCRA Permitting in support of Pipe-N-Go:
 - A revised Notice of Intent (NOI) to define storage locations at PFP was released for public review
 - Revised Part A to provide permitted storage at PFP will be transmitted to Ecology in May 2000
- Notice of Construction (NOC) was sent to Washington State Department of Health (WSDOH) on March 6, 2000, could take up to 60 days for approval. No feedback received to-date.

BASELINE CHANGE REQUESTS CURRENTLY IN PROCESS (\$000)

		· · · · · · · · · · · · · · · · · · ·	7 0 0						
PROJECT CHANGE NUMBED	DATE	BCD TITLE	FY00 COST IMPACT	ССН	тесн	DATE TO	ССВ	RL APP'VD	CURRENT STATUS
FSP-2000-001	13-Oct-99	Delete TRP-99-419, Complete Install. of Production Scale Vertical Calciner	\$0						Deleted
FSP-2000-004	23-Nov-99	PFP Test Polycube Stabilization via Muffle Furnace	\$0	X	X	17-Feb-00	17-Feb-00		RL approved
FSP-2000-005	30-Nov-99	Implement PFP Int Proj Mgmt Plan Addendum I	\$659	X	X				In work at PFP
FSP-2000-011	27-Dec-99	Adjusted PFP Cementation Processing to include Sand, Slag and Crucible	\$0	X	X	14-Jan-00	18-Jan-00	17-Feb-00	Implemented
FSP-2000-025	10-Mar-00	PFP Replacement Transformer	\$992	X		27-Mar-00	27-Mar-00	Not Req'd	Implemented
FSP-2000-029	26-Jan-00	PFP FY2000 Funds Reduction	(\$6,885)	X		9-Mar-00	23-Mar-00		Submitted to RL 3/24/2000
FSP-2000-032	22-Mar-00	PFP 2nd Bagless Transfer System	\$2,127	X	X	29-Mar-00	7-Apr-00		Submitted to RL 4/7/2000
FSP-2000-035	3-Apr-00	PFP Carry-over Workscope	\$620	X	X				In work at PFP
		ADVANCE V	VORK AUTI	IORIZA	TIONS				
AWA-00-001	21-Oct-99	Polycube Stabilization Testing	\$500	X	X			21-Oct-99	Completed
AWA-00-002	22-Sep-99	Residue Cementation	\$500	X	X			19-Oct-99	Completed
AWA-00-003	01-Jan-00	Main Power Transformers	\$350	X				31-Jan-00	Completed
AWA-00-004	01-Jan-00	2nd Bagless Transfer Unit	\$500	X	X			11-Feb-00	Completed
AWA-00-005	6-Mar-00	2nd Bagless Transfer Unit	\$500	X	X			8-Mar-00	Completed

MILESTONE ACHIEVEMENT

		FISCAL YEA	AR-TO-DATE	REMAI				
MILESTONE TYPE	Completed Early	Completed On Schedule	Completed Late	Overdue	Forecast Early	Forecast On Schedule	Forecast Late	TOTAL FY 2000
Enforceable Agreement	1	0	0	0	0	1	0	2
DOE-HO	0	0	0	1	0	0	0	1
RL	1	0	0	1	0	9	0	11
Total Project	2	0	0	2	0	10	0	14

Tri-Party Agreement / EA Milestones

Tri-Party Agreement Milestone M-15-37A (TRP-00-501), "Deliver Two (2) Tank Z-361 Core Samples to 222-S", due 10/30/99

Green

• Completed 1 month early (9/28/99)

Tri-Party Agreement Milestone (TRP-00-511), "Deliver Two (2) Validated Data Packages to EPA", due 5/31/00

Green

On Schedule

DNFSB Commitments

DNFSB Milestone IP-113 (TRP-00-500), "Install 2 LANL Pyrolysis Units for Stabilization of Polycubes at PFP", due 12/31/99

Yellow

Alternative path forward using PFP muffle furnaces being evaluated. Thermal stabilization testing
at PNNL and PFP's PPSL underway consistent with approved AWA. Issued path forward
recommendation to use direct thermal stabilization process versus pyrolysis.

Letter issued to DOE-RL indicating milestone would not be met.

MILESTONE EXCEPTION REPORT

Number/WBS Level Milestone Title Baseline Forecast Date Date

Overdue – 2

TRP-00-415 HQ Complete Project W-460 Facility Design 02/29/00 05/05/00 **1.4.5**

Cause: Issuing for review took longer than scheduled and then received more comments back than anticipated, thus comment incorporation taking longer than planned.

Corrective Action: Incorporating comments to ready design for release for construction.

TRP-00-500 HQ Install Two LANL Pyrolysis Units for 12/31/99 Proposed 1.4.5 Stabilization of Polycubes Deletion

Cause: See DNFSB Commitment above.

Corrective Action: A BCR to remove pyrolysis stabilization of polycubes and implement thermal stabilization in its stead has been approved by RL and implemented into the baseline. However, this is a HQ milestone and cannot be removed from the list.

FY 1999 OVERDUE - 2

TRP-99-419 RL Complete Installation of Production 09/30/99 Proposed 1.4.5 Scale Vertical Calciner Deletion

Cause: The production scale vertical calciner has been replaced with the Magnesium Hydroxide

Precipitation process.

Impact: No impact. This milestone is obsolete.

Corrective Action: Since installation and testing of the production scale vertical calciner is an EM-65 Management Commitment, the Department of Energy, Richland Office (DOE-RL) change control process cannot remove this milestone.

TRP-99-500 HQ Complete Installation & Testing of 09/30/99 Proposed **1.4.5** Production Vertical Calciner Deletion

Cause: The production scale vertical calciner has been replaced with the Magnesium Hydroxide Precipitation process.

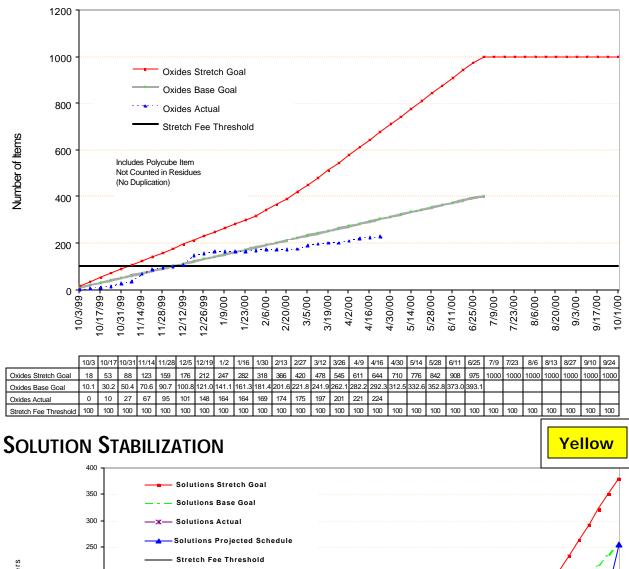
Impact: No impact. This milestone is obsolete.

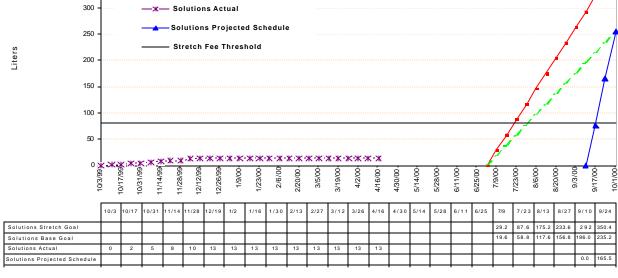
Corrective Action: Since this milestone is a DOE-HQ milestone and is part of the DOE-HQ 1998 DNFSB Recommendation 94-1 Implementation Plan, the Department of Energy, Richland Office change control process cannot remove this milestone. However, this milestone will be removed upon approval of the revised DOE-HQ DNFSB Recommendation 94-1 Implementation Plan.

PERFORMANCE OBJECTIVES

Green

OXIDES/METALS/POLYCUBES STABILIZATION

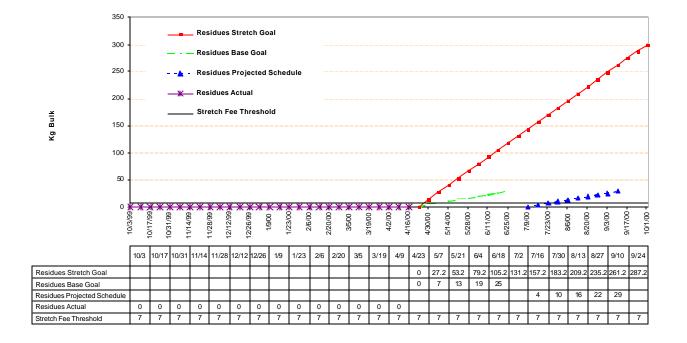




Aggressively pursuing construction completion in support of stabilization activities.

RESIDUES STABILIZATION

Yellow

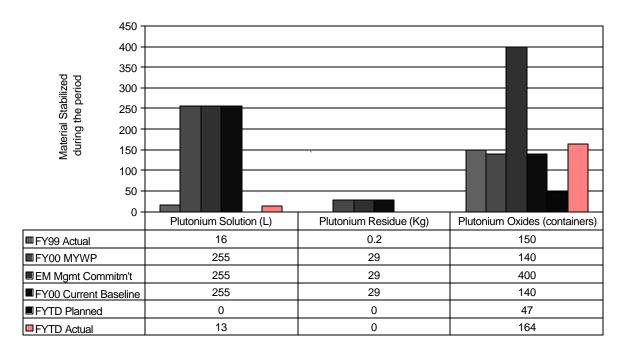


Update baseline schedule for new cementation start-up date and adjust ash schedule for preparatory work.

KEY INTEGRATION ACTIVITIES

- An internal workshop was held to start development of Data Quality Objectives (DQOs) for stabilized material sampling and analysis. This work is being led by PNNL.
- Work continues with Rocky Flats to come to a joint solution to PFP's stabilization heating process.
- There is a Memorandum of Understanding (MOU) with Waste Management to define requirements and responsibilities to support Central Waste Complex (CWC) and Waste Isolation Pilot Plant (WIPP).
- Phase I testing with surrogate solutions by PNNL continues.
- Continue work with Rocky Flats to procure containers (Pipe-n-Go) to support PFP Residue Stabilization without the need for another procurement action.
- Technical assessments by PNNL of various path forward decisions continue.

Nuclear Materials Stabilized During the Current Period

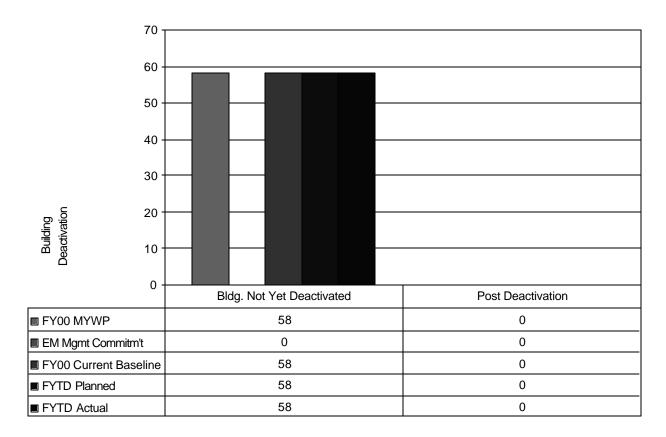


Plutonium Solution: It is expected that the current FY00 baseline will be met. Laboratory testing resulted in early stabilization of 13 liters of Plutonium solution during 1st quarter FY00.

Plutonium Oxides: Approval of Environmental Impact Statement via supplement analysis increasing charge size of furnaces by a factor of 4 and increasing number of furnaces from 2 to 5 allowed the actual stabilization to proceed faster than planned. Metal/oxide stabilization will continue for the next quarter, whereupon the focus will switch towards stabilization of the solutions.

Uranium in Other Forms: There is no Uranium inventory.

Building Deactivation



Buildings Not Yet Deactivated: Deactivation of buildings will not begin until FY 2009 as documented in the Integrated Project Management Plan for the River Corridor

Post Deactivation: There are no buildings in post deactivation.